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## 8. Physiotherapy

**252\*** Correlation of physical performance and quality of life in adult patients with cystic fibrosis

M. Hofer<sup>1</sup>, B. Fiechter Lienert<sup>1</sup>, T. Kurowski<sup>1</sup>, A. Boehler<sup>1</sup>. <sup>1</sup>Adult CF Unit, Division of Pulmonology, University Hospital, Zurich, Switzerland

**Aim:** To prospectively evaluate physical performance and quality of life in a cohort of adult CF patients (non transplant candidates).

**Methods:** Physical performance and quality of life were measured with pulmonary function (FEV1), six-minute walk test (6MWT), SF-36 and St George's Respiratory Questionnaire (SGRQ). Symptoms of depression were evaluated with the short form of the Patient Health Questionnaire (PHQ-D).

**Results:** From 62 patients 23 patients (10 females) with a mean age of 31±9 y performed the investigation. Mean body mass index (BMI) was 22±3 kg/m<sup>2</sup>, FEV1 2.3±1.3L (59±26%) and 6MWT 726±128 m. Values of the 8 domains of SF36 were 86±17 (physical functioning, normal healthy adults >57), 86±29 (physical role, >56), 88±16 (bodily pain, >62), 57±16 (general health, >45), 59±12 (vitality, >47), 86±16 (social functioning, >57), 84±28 (emotional role, >55) and 78±9 (mental health, >41). The total score of SGRQ was 23±14 (healthy adults <6), with a symptom score of 45±20 (<12), activity score of 24±22 (<9) and impact score of 15±13 (<2). In the short PHQ-D no patients had signs of a major depression or anxiety.

We found a significant correlation of FEV1, FEV1%pred and 6MWT%pred with the SF-36 domain "physical functioning" and all domains of the SGRQ ( $r > 0.5$  and  $p < 0.01$ ).

**Conclusion:** In our adult CF patients we found normal values for the 8 domains of the SF36. On the other hand, the more specific respiratory questionnaire (SGRQ) showed an impairment of respiration related quality of life compared to healthy adults. There is a significant correlation between physical functioning and respiratory related quality of life.

**254** High motivation for playing sports in cystic fibrosis – what we play is life

B. Almajan-Guta<sup>1,2</sup>, C. Avram<sup>3</sup>, V. Almajan-Guta<sup>4</sup>, A. Rustu<sup>4</sup>, I. Ciuca<sup>5</sup>, O. Cluci<sup>4</sup>, H. Filipescu<sup>6</sup>, L. Pop<sup>5,7</sup>. <sup>1</sup>University Politehnica, Sport and Physical Education, Timisoara, Romania; <sup>2</sup>National CF Centre, Physiotherapy, Timisoara, Romania; <sup>3</sup>West University, Timisoara, Romania; <sup>4</sup>Special Care Center Speranta, Physiotherapy, Timisoara, Romania; <sup>5</sup>Victor Babes University of Medicine, Pediatrics, Timisoara, Romania; <sup>6</sup>University Politehnica, Timisoara, Romania; <sup>7</sup>National CF Centre, Timisoara, Romania

**Background:** There are still parents who believe that their children with cystic fibrosis (CF) should not exercise, but those patients prefer physical activities to any other form of treatment.

The objective is to demonstrate the efficiency of a combine programme physical activities and physiotherapy in children with CF.

**Method:** This study was conducted for 6 months, in the Romanian National CF Centre with 38 patients (aged between 7 and 13 years), randomized in 2 groups. The control group (19 patients), was treated using classic physiotherapy techniques. For the study group (19 patients) we additionally used sport activities 3/week. Before and after the treatment we have evaluated the functional respiratory parameters, the number of hospitalisations, participations at school and activities of daily living questionnaires.

**Results:** We noticed improvements regarding functional respiratory parameters in the study group: 11.2% increase in FEF25–75% ( $p = 0.04$ ); 13.5% increase in FEV1 ( $p = 0.002$ ); and 14.8% increase in FVC ( $p = 0.041$ ). Although we didn't find significant differences between groups at baseline in regard to studied parameters, we found significant differences after 6 months of study regarding FEF25–75% ( $p = 0.036$ ) and FEV1 ( $p = 0.043$ ). Study group vs control group: 60% vs. 48% of constant participation at school activities, 21% vs 32% the number of hospitalisations, 16% vs. 42% fatigue during daily activities.

**Conclusions:** Sport activities gives a better motivation to participate at therapy. Combining sports with airway clearance techniques leads to significant improvements in respiratory function and optimizing quality of life.

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**253\*** Exercise physiologic response during three different video games in cystic fibrosis patients

T. del Corral Núñez-Flores<sup>1</sup>, J. Percegon<sup>2</sup>, M. Seborga<sup>2</sup>, N. Trujillo<sup>2</sup>, L. Hernandez<sup>2</sup>, A. Rejas<sup>3</sup>, W. Lalinde<sup>3</sup>, J. Villá<sup>4</sup>, J. Vilaro Casamitjana<sup>5</sup>.

<sup>1</sup>Asociación Madrileña Contra La Fibrosis Quística (AMCFQ), Madrid, Spain;

<sup>2</sup>Respiratory Medicine, University of Barcelona and University Pompeu Fabra, Barcelona, Spain;

<sup>3</sup>O2H Corporation, Madrid, Spain;

<sup>4</sup>Grup de Recerca en Bioinformàtica Mèdica (GRIP), Universitat Pompeu Fabra, Barcelona, Spain;

<sup>5</sup>FCS Blanquerna, grup de recerca en fisioteràpia (GReF), University Ramon Llull/Fundació Clínic, IDIBAPS, Barcelona, Spain

**Introduction:** Cystic fibrosis (CF) is a multisystemic disease characterized by an abnormal ventilation response that limiting the exercise tolerance. Current evidence shows that physical training increases exercise capacity, decreases dyspnea and improves quality of life in patients with CF. Adherence to respiratory rehabilitation programs is a key factor to guarantee optimal benefits. Our goal was to determine the efficiency of three Nintendo Wii™ video game as training systems by measuring the physiologic response of performing different exercises with CF patients.

**Method:** we included 24 CF patients [mean±SD: age: 12±3.7 years; BMI: 18±3; FVC: 97±20%; FEV<sub>1</sub>: 93±20%] followed 4 different exercise types in randomized order during six minutes: (1) 6-min walking test (6MWT); (2) Nintendo Wii Fit Plus (Wii-Fit); (3) Nintendo Wii Active (Wii-Acti), and (4) Nintendo Wii Family Trainer (Wii-Train). All physiologic responses were recorded breath by breath by using a portable gas analyzer (Fitmate Pro, Cosmed, Italy).

**Results:** In all video game exercises, after the 3th minute, all physiological variables describe a plateau profile that remains stable until the end of the test, similar to the 6MWT. The Wii-Acti and Wii-Train obtained high and significative values compared with the 6MWT.

**Conclusion:** From a physiological perspective, exercises executed with video game platforms are feasible and allow high intensity time-sustained exercise. This type of training could be recommended to the patients CF and can induce important physiologic improvements when used as a training method.

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**255\*** Habitual physical activity in children with cystic fibrosis: reliability and relationship with quality of life and lung function

L. Kent<sup>1</sup>, B. O'Neill<sup>2</sup>, J. Murray<sup>3</sup>, A. Reid<sup>3</sup>, J.S. Elborn<sup>1,4</sup>, J. Bradley<sup>1,2</sup>. <sup>1</sup>Belfast City Hospital, Belfast, United Kingdom; <sup>2</sup>University of Ulster, Newtownabbey, United Kingdom; <sup>3</sup>Royal Belfast Hospital for Sick Children, Belfast, United Kingdom; <sup>4</sup>Queens University Belfast, Belfast, United Kingdom

**Objectives:** To determine (1) test-retest reliability of Habitual Activity Estimation Scale (HAES) and CFQ-R; (2) the relationship between HAES, CFQ-R and FEV<sub>1</sub>. **Methods:** Parents and children with cystic fibrosis (CF) (6 to 11 yrs) completed the HAES and CFQ-R on 2 occasions 1 week apart, during a period of stable lung disease.

**Results:** 16 children (9M, 7F) mean(SD) age 9(2) yrs, FEV<sub>1</sub> 88(17)%predicted took part. All children reported they were unable to complete the HAES due to difficulties estimating percentage of time spent at each activity intensity. Parents reported that children were active (i.e. activities requiring lots of movement and make you breathe/sweat hard) for a mean(SD) 4.8(3.0) hrs/weekday and 4.9(3.7) hrs/weekend day. There was no significant difference between Time 1 and Time 2 in time spent active (mean(SD) difference: 0.74(1.7) hours/weekday  $p = 0.97$ ; -0.29(2.2) hours/weekend day  $p = 0.60$ ). All children completed the CFQ-R. Mean(SD) score on the CFQ-R was 81.7(12.6) for parent-reported and 80.8(9.2) for child-reported questionnaires. The parent and child CFQ-R were found to be reliable (mean(SD) difference Time 1 to Time 2: -0.05(7.5)  $p = 0.58$ , 1.84(6.7)  $p = 0.29$  respectively). There was a moderate but non-significant correlation between time spent active on weekdays ( $r = 0.494$ ,  $p = 0.052$ ) and weekend days ( $r = 0.389$ ,  $p > 0.05$ ) and parent-reported CFQ-R. No relationship was found between time spent active and FEV<sub>1</sub>% predicted (weekdays:  $r = 2.63$ ,  $p > 0.05$ ; weekend:  $r = 2.67$ ,  $p > 0.05$ ).

**Conclusion:** Young children found the HAES too difficult however it appears feasible for parents. The CFQ-R and HAES were reliable and there was a trend towards a moderate relationship in parent-reported questionnaires.